FAM CART

Schools in India require cash payments for different transactions, e.g. canteen purchases, school enrichment classes, textbooks purchases, and school bus services. Typically, parents give pocket money (in cash) to their children to manage such expenses. Design a solution that would enable a cashless school system. Information could also be used to monitor students' expenditures and even dietary habits.

The problem we intend to solve:

There are several reasons why electronic payments are preferable to cash. Some of them are as follows:

1. Security hazard: Cash can be stolen or lost, making it dangerous to carry around. Electronic payments, on the other hand, are more secure since they can be recorded and watched, making it simpler to spot and stop fraudulent actions.

2. Misusage of cash: Children misusing money is a frequent problem that parents frequently deal with. Children could lack the maturity or expertise to manage their finances responsibly, which can result in careless spending or even debt.

3. Inconvenience: Having cash on hand, especially when making significant transactions, can be bothersome. Carrying big sums of cash can be challenging, and it can be uncomfortable and time-consuming to count out the proper amount. On the other hand, electronic payments are more practical because they can be done quickly and conveniently using a card or mobile device.

4. Lack of records: It may be difficult to manage and reconcile expenses with cash payments because there may be no record of the transaction.

5. Hygiene issues: Due to the COVID-19 outbreak, there has been an increase in hygiene issues with banknotes. Cash is a significant health risk because studies have revealed that it might contain bacteria and viruses. Electronic payments, on the other hand, allow for payment without establishing physical contact and are therefore a safer option.

As a result, our team (team name) developed FamCart as a solution to this issue. FamCart allows parents to give money to their children while simultaneously monitoring their spending patterns and the goods that their children are purchasing. Furthermore, they restrict foods based on the child's sensitivity to particular ingredients. A warning notification will show up if the child makes more purchases than the restricted quantity. This makes it simpler for parents to monitor their child's health and financial situation. Additionally, there is a personalized AI chatbot that can offer children/parents financial literacy and management and act as a guide to their financial well-being.

How FamCart works – The Architecture

1. User Registration and Login – We created a registration system that enables both parents and children to create their own accounts. One parent can add multiple children's accounts. After registration, they can log in using their email and password.

2. Firebase (Google Cloud Platform) – We used Firebase to create databases- children, parents, products, requests, restrictions, and transactions for various functionalities used in the website.

3. Payment Gateway Integration – We integrated Stripe into our project to facilitate payments.(write how stripe works). The payment gateway will enable parents to add money to their accounts, which they can use to pay their children.

4. Request Money – Children can also request money from their parents. The parent homepage side displays the requests that have been made.

5. Transaction Management – Our website keeps track of every transaction and presents it in an intuitive way. Both parents and kids have access to their transaction history, which includes the total amount paid, the transaction date, the items purchased, and the quantity.

6. Restriction system - Parents can add restrictions to the items their children can buy. They can set the quantity they can intake on weekly basis. When customers attempt to purchase a certain item more than the permitted number of times, a warning message appears.

7. FamCart AI Chatbot – The FamCart AI chatbot is a knowledge-based domain-specific AI chatbot that uses LLM under the hood to generate Human-centric natural language responses as per the corresponding input queries. Children/Parents can have access to a personalized AI chatbot that can provide financial education and help in tracking the expenditure habits of the children. The AI chatbot is developed on top of LLMs(Large Language Models) using LangChain, which is a framework built around LLMs. The AI chatbot can also help new users by providing them with an overview of our project and how they can make the best use of it.

8. Deployment – (about AMD instances and how we used them)

Add ons and future improvements:

1. We are able to develop the AI chatbot and make our website redirect to where the chatbot has been deployed. Currently, the chatbot is deployed separately due to time constraints. We aim to integrate the AI chatbot feature into our website which will be knowledge-based and will keep track of the expenditure of the child and can help ease the process of financial management on behalf of the parents. Users can use the chatbot to obtain personalized financial advice. The technology can generate customized

financial plans and investment strategies based on a user's goals, risk tolerance, and financial situation. It can also identify the spending patterns of the student and offer suggestions for budget optimization. This feature can be accomplished by the use of LangChain which can access the database of the service and recognize the patterns for each individual.

2. Virtual card – A virtual card will be generated through which children can pay for the items they wish to purchase. The card will have a unique QR code and unique ID that can be used to track all purchases and transactions.

3. Restriction- At the moment, we are able to limit the things that students can buy on a weekly basis. We can expand that on a daily and monthly basis, where the child receives a message of alarm when the permissible amount of a particular item has been exceeded daily and monthly. This can help in providing Financial Discipline, Budget Management , Parental Control

4. Expenditure graph / Data Visualization – They can view the things and the number of items they bought in the form of different statistical models and charts on a monthly and weekly basis. Both parents and kids will be able to see this page. For visualizing expenditure data, libraries and frameworks such as Chart.js, D3.js, or Plotly can be used to create interactive charts, graphs, or visualizations that provide insights into spending patterns and trends. We believe Tracking the expenditure of children on a monthly and weekly basis using data analysis and visualization can provide several benefits:

- Budgeting and Financial Planning: By analyzing and visualizing the expenditure data, you can gain insights into the spending patterns of your children. This can help you create a budget and financial plan for your children, ensuring that their expenses are within the allocated budget. It can also help you identify areas where spending can be reduced or optimized.
- Expense Tracking: Keeping track of your children's expenses can help you understand where their money is being spent and identify

any unnecessary or excessive spending. Data analysis and visualization can provide you with a clear overview of expenses, making it easier to track and monitor spending habits.

- Accountability: Tracking expenses and visualizing the data can help hold your children accountable for their spending. They can see how much money they are spending, where it is being spent, and whether it aligns with their financial goals. This can promote responsible spending habits and encourage them to be more mindful of their expenses.
- Decision Making: Data analysis and visualization can provide the parents with a clear picture of their children's spending habits, allowing them to make informed decisions about their financial management. For example, you can identify areas where spending can be reduced, evaluate the impact of certain expenses on their overall budget, and make adjustments accordingly.

5. We want to extend this idea to the government level as well instead of limiting this concept to just parents and children. Governmental agencies provide the poor with funds for their daily necessities, but they do not keep track of how the funds are being used. So this can lead to the misusage of govt money. Therefore, by using our website they can track all the expenses the people are spending on the money they have been provided.

Challenges we faced:

1. Linking the databases - Linking all the databases that have been created in Firebase was one of the challenges we ran across when building this website. We ran into some problems with compatibility, security, and inconsistent data.

2. Stripe- Integrating Stripe into our website is one of our main issues while developing this website.

3. Amd instances- Our team found it challenging to launch the website using AMD instances. (Add more to this)

4. Creating the AI chatbot: The team had to fine-tune the language model which authentic sources and data in order to provide more accurate data and avoid the hallucination of the model is still a matter of concern as of now, which is unavoidable more or less when it comes to generative AI.